# 10 Aggregate Bases

## Aggregate Base

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## Subbase

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# *CHAPTER TEN: AGGREGATE BASES*

Uncoated aggregate bases are classified as compacted aggregate bases or subbases. In general, subbase has a small amount of material passing a No. 200 sieve making the material a well drained material. Compacted aggregate is more dense than subbase. Aggregate bases provide additional strength for pavement sections and allow less capillary rise of moisture from paving subgrades, making them less susceptible to "frost heave" and "pumping". Location, width, and depths of aggregate bases is found in the typical cross-section sheets of the plans.

## AGGREGATE BASE

An aggregate base is a dense-graded compacted aggregate that is normally placed on a prepared subgrade in accordance with Section **105.03**.

Materials used for aggregate bases are required to be size No. 53, Class D or Higher in accordance with Section **904**.

### PREPARATION OF SUBGRADE

Subgrade is required to be compacted in accordance with Section **207.04**. In areas of 500 ft or less in length, or for temporary runarounds, proofrolling is not required. Proofrolling is also not required in trench sections where proofrolling equipment cannot be used.

### TEMPERATURE LIMITATIONS

Aggregate is not placed when the air temperature is less than 35°F or on a frozen subgrade. Frozen aggregates may not be used.

### SPREADING

The aggregate is required to be spread in uniform lifts with a spreading and leveling device approved by the PE/PS. The spreading and leveling device is required to be capable of placing aggregate to the depth, width, and slope specified. The compacted depth of each lift is required to be a minimum of 3 in. and a maximum of 6 in. The aggregate is handled and transported to minimize segregation and the loss of moisture. In areas inaccessible to mechanical equipment, approved hand spreading methods may be used.

### COMPACTING

Aggregates are required to be compacted to a minimum of 100% of the maximum dry densities in accordance with **AASHTO T 99**. Compaction equipment is required to be in accordance with Section **409.03(d)**. Density of the compacted aggregate is determined in accordance with Section **203.24(b)**. The aggregate is required to meet the compaction requirements at the time subsequent courses are placed. In areas inaccessible to compaction equipment, such as private drives, mailbox approaches, and temporary runarounds, the compaction requirements may be accepted by visual inspection. All displacement or rutting of the aggregate is repaired prior to placing subsequent material.

### CHECKING AND CORRECTING BASE

The top of each aggregate course is checked transversely to the cross section and all deviations in excess of 1/2 in. are corrected. If additional aggregate is required, the course is remixed and re-compacted.

### PRIMING

A prime coat, when required, is required to be in accordance with Section **405**.

### METHOD OF MEASUREMENT

Compacted aggregate base is measured by the ton in accordance with Section **109.01(b)**.

### BASIS OF PAYMENT

The accepted quantities of compacted aggregate base are paid for at the contract unit price per ton, complete in place. The cost of placing, compacting, water, and necessary incidentals is included in the costs of the pay item. Payment is not be made for material placed outside of a one to one slope from the planned typical section. Replacement of pavement damaged by the Contractor's operations is done at no additional payment.

## SUBBASE

Subbase is a foundation course of selected materials, placed and compacted on a prepared subgrade in accordance with Section **105.03**.

Subbase for PCCP consists of 3 in. of coarse aggregate No. 8 as the aggregate drainage layer placed over a 6 in. coarse aggregate No. 53 as the separation layer. Dense graded subbase consists of a 6 in. of coarse aggregate No. 53.

Coarse aggregate No. 8 used as an aggregate drainage layer is required to consist of 100% crushed stone or air cooled blast furnace slag and meet the requirements of Section **904**.

**PREPARATION OF SUBGRADE**

Subgrade is required to be prepared in accordance with Section **207**.

**TEMPERATURE LIMITATIONS**

Aggregate may not be placed when the air temperature is less than 35°F or on a frozen subgrade. Frozen aggregates may not be used.

**SPREADING**

The aggregate is required to be spread in uniform lifts with a spreading and leveling device approved by the PE/PS. The spreading and leveling device is required to be capable of placing aggregate to the depth, width, and slope specified. The compacted depth of each lift is a minimum of 3 in. and a maximum of 6 in. The aggregate is handled and transported to minimize segregation and the loss of moisture. In areas inaccessible to mechanical equipment, approved hand spreading methods may be used.

**COMPACTING**

Subbases are required to be compacted as follows:

1) Aggregate Separation Layers and Dense Graded Subbase. Compaction is required to be in accordance with Section **301.06**.

2) Aggregate Drainage Layers. Compaction consists of two passes with a vibratory roller before trimming, and one pass with the same roller in static mode after trimming. A vibratory roller is required to be equipped with a variable amplitude system, a speed control device, and have a minimum vibration frequency of 1000 vibrations per min. A roller in accordance with Section **409.03(d)4** may be used.

All displacement or rutting of the aggregate drainage layers is required to be repaired prior to placing subsequent material.

In areas inaccessible to standard size compacting equipment, a specialty roller/compactor in accordance with Section **409.03(d) 6** may be used.

#### CHECKING AND CORRECTING SUBBASE

The top of each aggregate course is checked transversely, and all deviations in excess of 1/2 in. are corrected. If additional aggregate is required, the course is remixed and recompacted.

#### METHOD OF MEASUREMENT

Subbase for PCCP or dense graded subbase is measured by the cubic yard based on the theoretical volume to the neat lines as shown on the plans. The quantity shown in the Schedule of Pay Items is adjusted if the quantity is different by more than 2% of the measured quantity.

#### BASIS OF PAYMENT

The accepted quantities of subbase for PCCP or dense graded subbase are paid for at the contract price per cubic yard, complete in place. The cost of compacting, water, aggregates placed outside neat lines as shown on the plans, and necessary incidentals is included in the cost of the subbase.

## AGGREGATE PAVEMENTS OR SHOULDERS

Aggregate pavements or shoulder require a dense-graded compacted aggregate which is placed on a prepared subgrade in accordance with Section **105.03**.

Materials for this use are required to be No. 53 or No. 73 in accordance with Section **904**.

#### PREPARATION OF SUBGRADE

Subgrade is required to be compacted in accordance with Section **207.04**. In areas of 500 ft or less in length, or for temporary runarounds, proofrolling is not required. Proofrolling is also not required in trench sections where proofrolling equipment cannot be used.

#### TEMPERATURE LIMITATIONS

Aggregate is not placed when the air temperature is less than 35°F or on a frozen subgrade. Frozen aggregates may not be used.

#### SPREADING

The aggregate is required to be spread in uniform lifts with a spreading and leveling device approved by the PE/PS. The spreading and leveling device is required to be capable of placing aggregate to the depth, width, and slope specified. The compacted depth of each lift is a minimum of 3 in. and a maximum of 6 in. The aggregate is handled and transported to

minimize segregation and the loss of moisture. In areas inaccessible to mechanical equipment, approved hand spreading methods may be used.

**COMPACTING**

Aggregates are required to be immediately compacted to a minimum of 100% of the maximum dry densities in accordance with **AASHTO T 99**. Compaction equipment is required to be in accordance with Section **409.03(d)**. Density of the compacted aggregate is determined in accordance with Section **203.24(b)**. The aggregate is required to meet the compaction requirements at the time subsequent courses are placed. In areas inaccessible to compaction equipment, such as private drives, mailbox approaches, and temporary runarounds, the compaction requirements may be accepted by visual inspection. All displacement or rutting of the compacted aggregate is repaired prior to placing subsequent material.

**CHECKING AND CORRECTING BASE AND SURFACE**

The top of each aggregate course is checked transversely and all deviations in excess of 1/2 in. are corrected. If additional aggregate is required, the course is remixed and re-compacted.

**DUST PALATIVE**

A dust palative, if required, is required to be in accordance with Section **407**.

**METHOD OF MEASUREMENT**

Compacted aggregate is measured by the ton in accordance with Section **109.01(b)** for the type specified.

**BASIS OF PAYMENT**

The accepted quantities of compacted aggregate are paid for at the contract unit price per ton, for the type specified, complete in place. The cost of placing, compacting, water, and necessary incidentals is included in the costs of the compacted aggregate. Payment is not made for material placed outside of a one to one slope from the planned typical section. Replacement or repair of pavement or shoulders damaged by the Contractor's operations does not require additional payment.